Listing of the Claims

1. (Currently Amended)   An optical analysis system ~~(20)~~ for determining an amplitude of a principal component of an optical signal ~~(100)~~, the optical analysis system comprising:

      a first multivariate optical element for wavelength selective separation of the optical signal into a first part and a second part,

      a second multivariate optical element for wavelength selective weighting of the optical signal on the basis of a spectral weighting function,

      a first ~~(126)~~ and a second ~~(128)~~ detector for detecting the weighted first and second parts of the optical signal.

2. (Currently Amended)   The optical analysis system ~~(20)~~ according to claim 1, further comprising a dispersive optical element ~~(6; 106)~~ to spectrally disperse the optical signal, the first and the second multivariate optical elements ~~being~~ arranged to receive the dispersed optical signal.

3. (Currently Amended)   The optical analysis system ~~(20)~~ according to claim 2, wherein the first multivariate optical element comprises a first region for receiving a spectral portion of the dispersed optical signal, the first region ~~being adapted to modify~~ modifying the polarization of the dispersed optical signal.

4. (Currently Amended)   The optical analysis system ~~(20)~~ according to claim 2, wherein the second multivariate optical element comprises a second region for receiving a spectral portion of the dispersed optical signal, the second region having a transmission or reflectivity relating to the spectral weighting function.

5. (Currently Amended)   The optical analysis system ~~(20)~~ according to claim 3, wherein the first region of the multivariate optical element for modifying the polarization of the dispersed optical signal is configurable for generating configurable polarization modifications of the dispersed optical signal.

6. (Currently Amended)   The optical analysis system (20) according to claim 4, wherein the transmission and/or reflectivity of the second region of the second multivariate optical element is configurable.

7. (Currently Amended)   The optical analysis system (20) according to claim 1, wherein at least one of the first multivariate optical element and/or the second multivariate optical elements comprises at least one configurable transmissive or reflective liquid crystal cell (10;112, 116).

8. (Currently Amended)   The optical analysis system (20) according to claim 1, wherein the first multivariate optical element comprises a dichroic element (160) being adapted to spatially separate the first and the second part of the optical signal (100).

9. (Currently Amended)   The optical analysis system (20) according to claim 1, further comprising a polarization conversion element (150).

10. (Currently Amended)   An optical analysis system (20) according to claim 1, further comprising a light source for providing light for illuminating a sample (2) comprising a substance having a concentration and thereby generating the principal component, the amplitude of the principal component relating to the concentration of the substance.

11. (Cancelled)

12. (Currently Amended)   A method of determining an amplitude of a principal component of an optical signal (100), the method comprising the steps of:

separating the optical signal into a first part and into a second part by means of a wavelength selective multivariate optical element,

weighting of the optical signal on the basis of a spectral weighting function by means of a second multivariate optical element,

detecting the weighted first and second parts of the optical signal.

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13. (New)   The optical analysis system according to claim 3, wherein the second multivariate optical element comprises a second region for receiving a spectral portion of the dispersed optical signal, the second region having a transmission or reflectivity relating to the spectral weighting function.

14. (New)   A blood analysis system comprising:

a first multivariate optical element for wavelength selective separation of an optical signal into a first part and a second part,

a second multivariate optical element for wavelength selective weighting of the optical signal on the basis of a spectral weighting function,

a first and a second detector for detecting the weighted first and second parts of the optical signal.

15. (New)   The blood analysis system of claim 14 further comprising a light source that is directed towards on sample, wherein the light source striking the sample creates the optical signal.

16. (New)   The blood analysis system according to claim 14, further comprising a dispersive optical element to spectrally disperse the optical signal; and wherein the first multivariate optical element comprises a first region for receiving a spectral portion of the dispersed optical signal, the first region modifying the polarization of the dispersed optical signal.

17. (New)   The optical analysis system according to claim 16, wherein the second multivariate optical element comprises a second region for receiving a spectral portion of the dispersed optical signal, the second region having a transmission or reflectivity relating to the spectral weighting function.